June 5, 2023
New York State Public Service Commission
Empire State Plaza
Agency Building 3
Albany, NY 12223-1350

Re: Comments on Motion of the Commission to Address Barriers to Medium- and Heavy-Duty Electric Vehicle Charging Infrastructure

Daimler Truck North America (DTNA) submits the following comments in response to the New York Public Service Commission (NYPSC) proceeding regarding the barriers to medium- and heavy-duty (MHD) electric vehicle charging infrastructure.

DTNA is the largest producer of MHD vehicles in North America. DTNA is fully committed to supporting the emerging zero-emission vehicle (ZEV) market; we expect these technologies to play a significant role in the future of commercial transportation, and know they are a vital contributor to lowering NOx and GHG emissions. DTNA is investing heavily in the development of electric vehicles. We currently offer battery electric school buses, walk-in van chassis (Class 5/6), as well as heavy-duty (Class 8) trucks for sale, and we are preparing for the market introduction of an all-electric medium-duty (Class 6/7) truck. DTNA – in partnership with Portland General Electric (PGE) – is proud to have built the first-of-its-kind public charging island for commercial ZEVs in Portland, Oregon. In addition, DTNA launched a joint venture focused on public charging & refueling (Greenlane) to help in the acceleration of infrastructure that meets the needs of MHD vehicles. Finally, DTNA has an expert eConsulting team dedicated to supporting fleets with all aspects of the ZEV transition, including site design and interfacing with utilities. Therefore, DTNA is uniquely positioned to offer insights into MHD transportation electrification (TE).

The State of New York is an important market for MHD vehicles. DTNA commends the PSC for opening this docket and engaging in transportation electrification outreach. The transition to commercial battery electric vehicles (BEVs) is happening now, spurred by state and federal regulatory action as well as fleet and manufacturer commitments to decarbonize transportation. Fleets are mobile loads and are fundamentally different than electric power service to buildings that PSC has been regulating with the public utilities. DTNA recommends the PSC take "no-regrets" actions to enable fleet ZEV transitions in the near-term while longer-term issues can be addressed. DTNA encourages the Commission, as it develops its White Paper, to consider policies and procedures that meet the needs of New York's commercial vehicle fleets and enables them to take advantage of this transition to BEVs.

Transportation Electrification Principles

DTNA appreciates the NYPSC's careful consideration of transportation electrification. Utility preparedness is a prerequisite for achieving electrification infrastructure and a successful transition to ZEVs. DTNA recommends additional consideration of the guiding principles below:

- MHD transportation and its associated load is fundamentally different than light-duty vehicles (LDV), and must be treated as such. Unlike LDV, most MHD vehicles cannot charge using existing AC infrastructure, and require dedicated DC infrastructure, installed at sites designed with MHD vehicles in mind. See Figures 1 and 2 below illustrating the grid to truck energy flow, and the importance of MHD site design.

Figure 1. Illustration of Grid to Truck Energy Flow. (1) Power is pulled off primary voltage distribution lines, (2) voltage is stepped down over the transformer, (3) the meter measures how much energy is consumed, (4) the switchgear protects and isolates electrical equipment, (5a) the conversion unit (housed independently here) converts AC to DC and can sometimes be housed inside the dispenser, (5b) the dispenser connects to the vehicle via a CSS connector.

Figure 2. Example of medium-duty vehicle attempting to utilize existing EV infrastructure catering only to light-duty passenger vehicles (left), resulting in traffic disruption and operator frustration. Portland's Electric Island (right) shows successful implementation of dual purpose pull-through charging infrastructure able to support all vehicle classes.

- The required grid capacity to support projected vehicle volumes must be available **before** these vehicles are delivered to fleets. Lacking supporting infrastructure, New York is unlikely to successfully meet targeted emission reductions from the transportation sector, which will likely have far-reaching industry and economic implications and ultimately delay the transition to ZEVs. In addition, stranded ZEVs delivered to fleets but

unable to engage in commerce do not serve the ultimate goal of lowering transportation emissions.

- The NYPSC must consider that MHD vehicles are disproportionally located in concentrated urban areas, creating highly localized grid capacity addition needs in constrained spaces. The charging loads for MHD depots and public en-route charging hubs will not be evenly distributed across a utility's service area.

DTNA appreciates the opportunity to respond to the NYPSC's proceeding. DTNA provides the following responses to NYPSC's solicitation of stakeholder comments (in bold) on MHD electrification efforts and proactive planning.

Medium- and Heavy-Duty Vehicles:

What are the specific challenges to developing charging infrastructure for medium- and heavy-duty (MHD) vehicles?

For purposes of this discussion, DTNA considers "charging infrastructure" to include the full system required to deliver power to MHD vehicles from the charger port, beyond the point of common interconnection, including the distribution circuit and substation and transmission lines.

Commercial BEV deployments, even at initial fleet scale, often require significant increases in grid capacity. OEMs can produce MHD BEVs within 6-9 months, while utilities require a much longer timeline to plan, build, and energize the necessary grid capacity to charge them. Utilities do not begin adding capacity until they receive a request from the fleet, which is unlikely to occur before the fleet submits vehicle orders. This difference in timeline requires fleets strand vehicle assets waiting for infrastructure, or submit infrastructure requests before determining vehicle needs. Fleets are often deterred by this misalignment, and several have canceled BEV orders when faced with infrastructure lead times that exceed the vehicle delivery timeline.

Fleets also cite a lack of transparency on the part of the utility that make planning transportation and investment significantly more challenging than a conventional vehicle. Utilities are rarely able to offer definitive dates on when the new grid capacity will be ready for operational use. Rather, they offer a wide range of possible dates, which conflict with fleet needs to plan vehicle delivery, time incentive program funding appropriately, and plan movement of goods and services. DTNA appreciates that project completion dates can be difficult to predict as unforeseen delays can arise, but fleets need certainty to integrate BEVs into their operations. Additionally, it is difficult for utilities to produce accurate cost estimates until a project is in its final design phases. Once a utility produces its cost estimate, it is challenging to gather accurate information on cost-sharing arrangements, such as the financial responsibilities and commitment requirements for the applicant vs. utility. This cost information is critical for fleets upfront to compare vehicle total cost of ownership and commit to capital investments.

Utilities also have complex administrative processes that complicate and delay electrification progress. It is difficult to access the amount of distribution grid capacity currently available, or

that could be available, at different locations in a fleet's portfolio of depots. Many utilities request formal applications, with detailed information, and charge significant fees before they are willing to put the information request into their work queues. There is no firm timeline outlining when a fleet can expect to hear a response from the utility. Similarly, utilities often expect fleet applicants to submit the same information for each depot site under consideration, creating onerous administrative burdens. Where these sites span multiple utility territories, fleets find no harmonization in application forms, standards, pricing plans, and transportation electrification programs. Furthermore, each utility has unique procedures and standards that are not coordinated across institutions. Together, these issues create significant challenges for fleets when considering BEV deployment and required infrastructure across multiple locations. DTNA recommends that NYPSC guide utilities under their jurisdiction to adopt harmonized energization applications, work processes, and standardized equipment.

Additionally, many utilities have limited personnel who are familiar with transportation electrification, distribution planning, design, and construction. DTNA recommends utility TE program managers work with fleet customers to better understand the transportation and logistics business in order to address the unique needs of these customers. Currently, depot locations use relatively small energy loads, but fleets will soon become multi-megawatt customers. DTNA recommends Key Account Managers are assigned to these fleet depot customers to provide a single point of contact.

DTNA does not believe the concerns raised by various parties about stranded assets applies to distribution infrastructure for MHD electrification, especially depots - as posited in other proceedings across the country - and we urge NY PSC not to take this topic under consideration. Unlike large generating plants where these concerns merit serious consideration, distribution assets are far smaller in cost magnitude. Even in the unlikely case where expected charging loads never materialize, distribution assets are mobile – utilities regularly move transformers from location to location. Transformers, switchgears, switches, capacitor banks, etc. can always be used at other substations, or in the worst case, placed back into the utility's inventory to have sufficient items on hand for the need to respond to climate-related power restoration activities.

How do these challenges differ between electric utility service territories?

DTNA finds every electric utility to be unique, and even though this docket addresses only the investor-owned utilities, we believe all utilities, regardless of underlying ownership, should adopt more harmonized procedures, work processes, standards, TE program offerings, etc. to better aid the transition to zero emission transportation.

How do charging needs differ for school buses, transit buses, delivery trucks, garbage trucks, box trucks, stake trucks, transport refrigeration units, and other specialized equipment?

While charging needs differ by type of vehicle and respective use cases, DTNA anticipates that early use cases will be predominantly depot-based until public charging infrastructure becomes

more prevalent. Similarly, fleet BEV use cases and travel distance will reflect public charging availability, tending towards shorter distances in the near-term and longer distances long-term. In order to achieve state and federal climate goals, DTNA believes public charging hubs must be widely available to expand fleet accessibility and use cases. DTNA anticipates public charging hubs to be required for MHD vehicles in the 2027 timeframe, with each charging hub typically requiring over 20 MW in connected loads for ultra-fast charging. In the same timeframe, battery technology used in commercial vehicles is expected to improve and allow for high-powered charging. Class 8 trucks, which are used for many applications, including drayage, will utilize high-powered charging; and as they typically operate 24 hours a day, 7 days a week, they must have recharging times comparable to today's diesel refueling time to promote widespread adoption.

What other types of MHD vehicles, if any, should be considered in this proceeding?

In this proceeding, DTNA recommends NYPSC consider a broad range of on-road Class 2b through 8 vehicles. Under the EPA's proposed Greenhouse Gas Phase 3 rule, DTNA expects the State of New York to see approximately 53,300 commercial ZEVs added to the fleet between 2027 and 2032, with significant additional volumes to support regulatory requirements as early as 2025.

What segments of MHD vehicles are likely to have broad electric model availability in the near-term and which segments are likely to electrify on a longer timeline?

A number of battery electric models for all vehicle classes are already available in the market. The EPA projects there will be approximately 200 MHD BEV models available by 2024. DTNA currently offers battery electric school buses, walk-in van chassis (Class 5/6), medium-duty (Class 6/7), as well as heavy-duty (Class 8) trucks for sale. DTNA anticipates that Class 2b through 4 will have the broadest fleet uptake in the immediate term. These vehicles typically charge at a depot overnight on AC Level 2, at around 20kW, which places a smaller load requirement on the serving utility, therefore not requiring large grid expansion. Beginning in 2025, DTNA expects to see a significant increase in the Class 4-8 truck and tractor market in New York, coinciding with state regulations. In the near term, DTNA expects many of these vehicles will be adopted in to less weight sensitive applications with return-to-base operations. As additional regulatory drivers, vehicle technology, and charging infrastructure develop, DTNA expects to see these vehicles enter additional applications that will rely on short dwell time and public charging infrastructure.

What locations or types of locations should be considered as potential hubs for MHD vehicle charging? What criteria should be considered when selecting locations for potential hubs upstate and downstate?

DTNA recommends utilities actively engage with New York's fleets to understand what locations are most likely to serve as potential depot hubs. Furthermore, DTNA advises utilities to incorporate vehicle movement data and modeling techniques into their infrastructure planning. Vehicle movement data is available from public and private sources, such as USDOT and DTNA.

For its own part, DTNA makes vehicle movement data available to utilities at no charge for its own telematics-equipped Class 8 vehicles. DTNA recommends, at a minimum, NYPSC consider routes along the National Highway Freight Network and other high traffic areas including ports, warehouse districts, major distribution centers, and truck stops as likely MHD vehicle charging hubs in the near future.

Smaller commercial vehicles and small business fleet owners are more likely to utilize public opportunity charging available throughout their operational areas because of their reliance on public charging infrastructure or need for high daily vehicle mileage. NYPSC should also consider downtown areas, commercial districts, and parking lots as likely hubs for smaller commercial vehicles reliant on public charging.

What considerations are important for stakeholder engagement concerning MHD electrification? Describe effective strategies to engage that can meet the needs of fleets with 6 vehicles or less.

Most fleet owners are small businesses with fewer than 10 vehicles. DTNA believes these fleets may be excellent candidates for electrification, as many tend to operate within their local communities and could be well suited to return-to-base operations. However, these fleets are less likely to have the resources and personnel to commit to complex electrification projects and would greatly benefit from the harmonized, transparent processes discussed above. Most of these small business fleets use retail fueling at the pump today, and may similarly be attracted to public charging in their local communities.

Identify barriers that exist in the current MHD Make-Ready Pilot Program that could be modified in a successor to the pilot.

DTNA strongly urges NYPSC to end the use of pilot projects and remove them from consideration. Instead, NYPSC should focus on quickly increasing the scale of electrification and infrastructure implementation. Utility infrastructure takes many years to plan and build before it is operational, so meeting 2025-2032 transportation electrification requirements requires immediate action on the part of utilities. DTNA recommends NYPSC take steps to begin major grid capacity additions by the end of the year.

Provide comments on how to address the barriers to building publicly accessible charging that serves MHD vehicles (e.g., highway truck stops).

Public charging hubs pose unique barriers, especially for utilities. It can be challenging to determine the grid capacity at a specific site and potential to increase the grid capacity to meet charging loads in the near-term. Utilities often seek to minimize initial costs for electrification projects while creating the least amount of infrastructure, which inhibits effective future proofing for sites. Utilities' incremental approach to adding grid capacity results in higher pubic charging project costs in the long-term and increased sources of project delay.

DTNA believes utility processes for adding grid capacity and participating in transportation electrification programs are too sequential. Instead, DTNA recommends utilities work more

concurrently with construction activities on the depot site, which will also contribute to more effective future proofing.

Through the Make-Ready program, utilities offer fleet assessment services to help prepare for the transition to electric vehicles. What additional technical assistance is needed to support the transition to mass MHD electrification?

While Make-Ready programs are valuable resources in addressing customer's technical needs behind-the-meter, and from the meter to the Point of Common Interconnection, infrastructure upgrades with the longest lead times usually involve upgrades to distribution feeders or substation transformers, which are outside of the scope of many Make-Ready programs. The pinch point in the fleet customer experience has shifted from utility make-ready to the utility distribution grid. Without sufficient grid infrastructure available in a timely manner, fleets will not make the decision to move forward with BEV deployments despite the IRA incentives and utility make-ready programs that are available.

These distribution system considerations must be incorporated into every utility's outreach efforts to their fleet customers, with specific information on how much capacity is currently available, what temporary connection measures are possible while the permanent capacity is built, and the costs and timing for both. Even with make-ready programs, fleets do not purchase MHD electric vehicles without effective grid infrastructure in place. Further, DTNA anticipates fleets and depots will utilize alternative on-site energy options, such as energy storage, solar generators, and microgrids, to meet deadlines and avoid grid congestion and capacity constraints. Many utility make-ready programs exclude participants with multi-technology approaches from their programs, forcing customers to choose between the two and deterring decarbonization of the fleet.

DTNA also notes that fleets are increasingly operating from leased facilities. Contractual commitments between fleets and freight customers often do not exceed one year. If their contract is lost, the fleet is likely to move to another leased location to provide services for a new customer. As a result, fleets are often unable to enter agreements with utility programs that require long-term commitments, such as 10 years. However, make-ready program benefits would remain with the site owner, even after a fleet has left. To align make-ready programs and utilities, DTNA encourages utilities to reevaluate time-related commitments with the tenant, and instead focus on commitments with the property owner.

Proactive EV Infrastructure Planning and Investment:

Discuss how proactive EV infrastructure planning differs for light-duty and MHD vehicle market segments?

LLDVs operate across a utility's service area, so the grid can take advantage of this geographic dispersion. LDV charging loads, especially at home, are mostly Level 2, which places a smaller demand on the grid than MHD vehicles. A system-wide approach for the number of EVs incorporated into the load forecasts and Distribution System Plans are likely sufficient approaches for LDVs, except for loads at public charging hubs.

Smaller commercial vehicles, Class 2b through 4, place similar demands on the grid and will most likely charge overnight at depots. However, unlike LDVs, these vehicles have a tendency to congregate in commercial districts along with Class 4 through 8 vehicles. Larger Class 4 through 8 vehicles are likely to require the use of DC Fast Charging at speeds ranging from 50 kW to 2 MW, depending on the vehicle's dwell time and operational needs. These vehicles often operate in concentrated geographic locations, such as ports, depots, and truck stops, along with commercial districts. These vehicles frequently travel along predictable routes with other vehicles of similar classes. DTNA advises utilities to incorporate vehicle movement data and modeling techniques into their infrastructure planning. Vehicle movement data is available from public and private sources, such as USDOT and DTNA. For its own part, DTNA makes vehicle movement data available to utilities at no charge for its own telematics-equipped Class 8 vehicles. Vehicle data modeling should be incorporated into distribution load forecasts and subsequently used to identify high traffic zones where increased grid capacity is necessary.

DTNA believes the current grid capacity is not sufficient to meet projected needs in the 2025-2032 timeframe. With utilities' estimates of 6-8 years to build a grid with sufficient capacity, it is imperative that these projects begin now for electric trucks that will be begin service in the near-term.

Discuss how battery energy storage systems and other distributed energy resources can be implemented in both short-term and long-term planning for electric vehicle charging needs across vehicle classes.

It is likely that depots and public charging hubs will implement on-site energy storage systems if utilities cannot provide sufficient grid capacity, either in amounts or in timing. This can include recharging electric vehicles by capturing renewable power generated through solar cell systems, or by storing power from the grid at lower amounts. However, this approach would require a separate application to utility to add energy storage, as opposed to solely a grid capacity application, which is likely to extend approval and implementation times. Additionally, if the site was considering utilizing a make-ready program, many utilities prohibit participation if a project involves on-site energy storage.

Is vehicle-grid integration technology at a sufficient level of maturity to impact short-term planning considerations? If so, describe how; if not describe why not.

DTNA does not believe vehicle-grid (V2G) integration technology is at a sufficient level of maturity to impact short-term planning. At this time, DTNA believes utilities and utility regulators should focus on building new distribution capacity in zones where fleets congregate. DTNA believes there are many aspects of V2G that may prevent widespread adoption in the future including 1) potential battery degradation 2) additional costs of V2G technology in fleets' total-cost-of-ownership calculations, and 3) fleet utilization rates preventing V2G. BEVs are costly assets that are competitive on a cost-per-mile basis, so DTNA believes fleets will generally seek high rates of in-commerce utilization and are unlikely to be attracted to V2G, unless prompted by some specific use case. For these

reasons, DTNA recommends NYPSC not factor V2G into planning considerations at this time.

How can managed charging programs reduce upfront infrastructure needs?

DTNA acknowledges the goal for electric vehicle charging to occur with minimal impact on grid capacity and at sites with an abundance of renewable energy available, but notes that commercial needs and operations will dictate the needs of the MHD fleet and managed charging may often not be feasible. In many LDV cases, managed charging programs exist with or without utility tariffs and expensive electric vehicle supply equipment (EVSE) that is capable of receiving signals form the utility. Most electric vehicles come with standard software features to program times to start and stop charging.

Commercial vehicles are assets acquired by businesses to perform tasks and fulfill obligations to their customers. For freight customers, on-time delivery performance is critically important. For school and transit bus operators, daily route schedules dictate usage times and durations. For other, vocational customers, specific tasks like snow removal, utility line work, and construction projects often must occur at specific times. In some cases, where business operations permit, it may be possible to manage the charging times and reduce the need to increase grid capacity to meet coincident peak loads, but commercial vehicle use cases are often unlikely to coincide with a utility's time of use (TOU) interests, because the vehicles must first and foremost perform the jobs for which they were purchased.

Oftentimes, trucking companies operate at night when traffic congestion is at its lowest, and other specific jobs (like city street sweepers) are only performed at night. These vehicles would very likely charge on peak to be ready to perform overnight operations. In these instances, "managed charging" may require the use of energy storage systems.

What strategies can reduce the risk of future-proofed sites from becoming stranded assets if a fleet or other baseload user changes their operations or moves to a different site?

In the Northeast, climate change is expected to increase the frequency and intensity of storms, especially extreme precipitation and extreme heat, and lead to more frequent high tide flooding. Should the impact of current and future climate vulnerabilities be addressed in the infrastructure planning process (e.g., sites that are in or are projected to be in the floodplain)? If so, how?

Commercial vehicles provide essential services, whether delivering groceries, plowing streets, or responding to natural disaster clean-up efforts. Many of the goods and services required immediately following a climate event are likely to be provided by electric trucks in the future. Power service for electrified fleets supported by depots and public charging hubs must be planned and treated similarly to other essential services, like hospitals and fire stations. Following power outages, utilities must prioritize restoring power to fleets so they can transport necessary items.

What types of site locations and use cases should be prioritized for proactive future-proofing, and why?

DTNA supports proactive future proofing and planning for the future of TE. NYPSC should consider all locations and uses as eligible candidates for future proofing instead of the incremental approach to adding grid capacity, as it will take longer and be more expensive in the long-term. Effective future proofing should consider current and future vehicle regulations. DTNA believes there must be full alignment between the State of New York's air quality and decarbonization targets and utilities' Distribution System Plans. Those plans should be made in accordance with load forecasts and approved by the NYPSC. Compliance requirements imposed by New York state agencies, such as the Advanced Truck Rule, provide guidance for proactive future proofing at various sites and for different use cases.

Are there alternative financing models for bringing new electric service to sites with additional capacity for future-proofing? Please describe.

We are witnessing a number of innovative business models emerging in the marketplace to offer "charging-as-a-service" (CaaS), "trucking-as-a-Service" (Taas), or "Mobility-as-a-Service" (MaaS). DTNA views these developments in the marketplace as positive steps towards electrification targets. If these service providers contribute funding to build additional grid capacity for future proofing, the NYPSC should approve new tariffs and schedules for utilities to issue. Once operational, the new grid capacity can be released to the utility to own and operate. When a utility believes future proofing is too risky, DTNA encourages financial contributions from third party investors to increase grid capacity and other future proofing tactics.

Conclusion

Successfully electrifying MHD transportation to reach climate goals relies heavily on an effective, expansive, readily-available and reliable infrastructure. DTNA recommends that NYPSC instruct utilities within their jurisdiction to adapt the suggested changes to allow for a quicker, more efficient transition to electric transportation. DTNA encourages the use of vehicle movement data in planning public charging infrastructure and hubs. Infrastructure planning should consider effective future proofing tactics to minimize long-term costs and the essential role electric transportation will play in the future. The planning and construction of electric infrastructure needs to begin immediately with the collaboration of utilities to enable state and federal carbon reduction goals.

DTNA thanks the NYPSC for the opportunity to provide feedback on the Motion of the Commission, and looks forward to continued collaboration with the Commission to enable widespread transportation electrification.

Sincerely,

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